



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/659,192	09/10/2003	David E. Gindelberger	1999U037D1.US-CON	5614

7590 06/02/2005

Univation Technologies, LLC
Suite 1950
5555 San Felipe
Houston, TX 77056

EXAMINER

CHOI, LING SIU

ART UNIT	PAPER NUMBER
----------	--------------

1713

DATE MAILED: 06/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/659,192

Applicant(s)

GINDELBERGER, DAVID E.

Examiner

Ling-Siu Choi

Art Unit

1713

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>09/10/2003</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

1. This Application is a Continuation of US Application No. 10/360,121, filed February 7, 2003, now US Patent No. 6,797,791, which is a Division of US Application No. 09/458,399, filed December 10, 1999, now US Patent No. 6,541,412.
2. This Office Action is in response to the Preliminary Amendment. Claims 1-27 are now pending.

Double Patenting

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claims 1 and 8-10 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 5-6, and 8 of U.S. Patent No. 6,541,412. Although the conflicting claims are not identical, they are

Art Unit: 1713

not patentably distinct from each other because "O" in the formula claimed in US 6,541,412 reads on "Q" in the formula claimed in the present invention.

US 6,541,412	present Application
claim 1 T-M(R ¹) ₂ -O-[M(R ²) ₂ -O] _n -M(R ¹) ₂ -T or T-M(R ¹) ₂ -O-[M(R ²) ₂ -O] _n -[M(R ³) ₂ -O] _m -Si(R ¹) ₂ -T	claim 1 T-M(R ¹) ₂ -Q-[M(R ²) ₂ -Q] _n -M(R ¹) ₂ -T or T-M(R ¹) ₂ -Q-[M(R ²) ₂ -Q] _n -[M(R ³) ₂ -Q] _m -Si(R ¹) ₂ -T
claim 5	claim 8
claim 6	claim 9
claim 8	claim 10

Claim Objections

5. Claims 1-27 are objected to because of the following informalities: (a) **claim 1**, line 7; **claim 12**, line 6, in view of Formula VIII on page 17 of the Specification, it appears that there is a typo in the recitation "T-M(R¹)₂-Q-(M(R²)₂-Q)_n-(M(R³)₂-Q)_m-Si(R¹)₂-T", wherein Si should be replaced by M; (b) **claim 21**, line 4, " L' " is suggested to be changed to --L--; and (c) **claim 22**, line 3, "boron" is suggested to be changed to -borane--; line 4, " combination" is suggested to be changed to --combinations--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office

Art Unit: 1713

action:**A person shall be entitled to a patent unless --****(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.**

7. Claims 1-3 and 5-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Nagy et al. (WO 97/45459).

A method to prepare a polymerization catalyst comprising	
A	a bulky-ligand metallocene or Group 15 containing polymerization catalyst
B	an alternating Group 14 and Group 16 atom containing oil or amorphous solid: $T-M(R^1)_2-Q-[M(R^2)_2-Q]_n-M(R^1)_2-T$ or $T-M(R^1)_2-Q-[M(R^2)_2-Q]_n-[M(R^3)_2-Q]_m-Si(R^1)_2-T$

(summary of claim 1)

Nagy et al. disclose a process to prepare a polymerization catalyst comprising combining (A) a polymeric oil of the formula of $R^{12}-[SiRR^{16}-O]_n-SiRR^{16}R^{12}$ with R being aliphatic or cycloaliphatic radical, aryl radical, or aralkyl or alkaryl radical; R^{12} or R^{16} being H or R and (B) a compound having the formula of $M^pL^4_rX'_{p-r}$ with M being a metal selected from Groups 3-10 of the Periodic Table or lanthanides and L^4 being a monoanionic aromatic ancillary ligand π -bonded to M, which can be a cyclopentadienyl or substituted cyclopentadienyl ring (page 4, line 15; page 21, lines 1-10; claims 35-36). Nagy et al. further disclose that the silicon oil has a number of repeating units, wherein the number of repeating units are preferably 10 to 100 because smaller polysiloxane

Art Unit: 1713

oils are too volatile and larger polysiloxane oils are more difficult to react and have poorer solubility and wherein the silicon oils have viscosity at 25°C between 1 to 1,000 cSt (page 21, lines 8-10 and 14). Thus, the present claims are anticipated.

8. Claims 12-19 and 23-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Nagy et al. (WO 97/45459).

A polymerization catalyst comprising	
A	a bulky-ligand metallocene or Group 15 containing polymerization catalyst
B	an alternating Group 14 and Group 16 atom containing oil or amorphous solid: $T-M(R^1)_2-Q-[M(R^2)_2-Q]_n-M(R^1)_2-T$ or $T-M(R^1)_2-Q-[M(R^2)_2-Q]_n-[M(R^3)_2-Q]_m-Si(R^1)_2-T$

(summary of claim 12)

Nagy et al. disclose a polymerization catalyst obtained by the contact of (A) a polymeric oil of the formula of $R^{12}-[SiRR^{16}-O]_n-SiRR^{16}R^{12}$ with R being aliphatic or cycloaliphatic radical, aryl radical, or aralkyl or alkaryl radical; R^{12} or R^{16} being H or R and (B) a compound having the formula of $M^pL^4_rX'_{p-r}$ with M being a metal selected from Groups 3-10 of the Periodic Table or lanthanides and L^4 being a monoanionic aromatic ancillary ligand π -bonded to M, which can be a cyclopentadienyl or substituted cyclopentadienyl ring (page 4, line 15; page 21, lines 1-10; claims 35-36). Nagy et al. further disclose that the silicon oil has a number of repeating units, wherein the number of repeating units are preferably 10 to 100 because smaller polysiloxane oils

Art Unit: 1713

are too volatile and larger polysiloxane oils are more difficult to react and have poorer solubility and wherein the silicon oils have viscosity at 25°C between 1 to 1,000 cSt (page 21, lines 8-10 and 14). Thus, the present claims are anticipated.

Claim Rejections - 35 USC § 103

9 The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nagy et al. (WO 97/45459) in view of Devore et al. (US 5,556,928).

Nagy et al. disclose a process to prepare a polymerization catalyst comprising combining (A) a polymeric oil of the formula of $R^{12}-[SiRR^{16}-O]_n-SiRR^{16}R^{12}$ with R being aliphatic or cycloaliphatic radical, aryl radical, or aralkyl or alkaryl radical; R^{12} or R^{16} being H or R and (B) a compound having the formula of $M^pL^4_rX'_{p-r}$ with M being a metal selected from Groups 3-10 of the Periodic Table or lanthanides and L^4 being a monoanionic aromatic ancillary ligand π -bonded to M, which can be a cyclopentadienyl or substituted cyclopentadienyl ring, wherein the silicon oil has a number of repeating units to be 10 to 100 (page 4, line 15; page 21, lines 1-10, 14; claims 35-36).

The difference between the present claims and the disclosure of Nagy et al. is the requirement of a specific stoichiometric activator.

Devore et al. disclose a process to polymerize olefin in the presence of a catalyst comprising metallocene and a cocatalyst, wherein the cocatalyst can be a polymeric alumoxane or $(L^*-H)^+_d(A^{d-})$ (abstract; col. 14, lines 40-45; col. 16, lines 28-51). As a cocatalyst, the use of $(L^*-H)^+_d(A^{d-})$ is equivalent to or exchangeable with the use of the polymeric alumoxane. Since an undesirable excess of the polymeric alumoxane is required as the cocatalyst, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the specific stoichiometric cocatalyst to replace the polymeric alumoxane in the disclosure of Nagy et al. and thereby obtain the present invention.

11. Claims 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagy et al. (WO 97/45459) in view of Devore et al. (US 5,556,928).

Nagy et al. disclose a polymerization catalyst obtained by the contact of (A) a polymeric oil of the formula of $R^{12}-[SiRR^{16}-O]_n-SiRR^{16}R^{12}$ with R being aliphatic or cycloaliphatic radical, aryl radical, or aralkyl or alkaryl radical; R^{12} or R^{16} being H or R and (B) a compound having the formula of $M^pL^4_rX'_{p-r}$ with M being a metal selected from Groups 3-10 of the Periodic Table or lanthanides and L^4 being a monoanionic aromatic ancillary ligand π -bonded to M, which can be a cyclopentadienyl or substituted cyclopentadienyl ring, wherein the silicon oil has a number of repeating units to be 10 to 100 (page 4, line 15; page 21, lines 1-10, 14; claims 35-36).

The difference between the present claims and the disclosure of Nagy et al. is

Art Unit: 1713

the requirement of a specific stoichiometric activator.

Devore et al. disclose a catalyst comprising a metallocene and a cocatalyst, wherein the cocatalyst can be a polymeric alumoxane or $(L^*-H)^+_d(A^{d-})$ (abstract; col. 14, lines 40-45; col. 16, lines 28-51). As a cocatalyst, the use of $(L^*-H)^+_d(A^{d-})$ is equivalent to or exchangeable with the use of the polymeric alumoxane. Since an undesirable excess of the polymeric alumoxane is required as the cocatalyst, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the specific stoichiometric cocatalyst to replace the polymeric alumoxane in the disclosure of Nagy et al. and thereby obtain the present invention.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kataoka et al. (US 6,228,791), Ito et al. (US 4,105,847), Karol et al. (US 5,034,366), Fourcade et al. (US 3,058,972).

Kataoka et al. disclose a process to prepare a catalyst comprising combining (A) the contact product of (a) an alkoxy magnesium compound, (b) a tetravalent halogen-containing titanium compound, (c) a diester of an aromatic dicarboxylic acid, (d) an aromatic hydrocarbon, and (e) at least one aluminum compound and (B) a polysiloxane represented in the general formula of $R^{13}R^{14}R^{15}Si-O-(SiR^{16}R^{17}-O)_\alpha-SiR^{18}R^{19}R^{20}$ with $R^{13}-R^{20}$ each being a methyl group or a phenyl group and α being from 2 to 30,000 (claims 1 and 13). Kataoka et al. further disclose that the polysiloxane has a viscosity of

Art Unit: 1713

from 2 to 10,000cSt at 25°C (col. 8, lines 4-8). However, Kataoka et al. do not teach or fairly suggest a process to prepare a catalyst comprising a bulky-ligand metallocene or Group 15 containing polymerization catalyst.

Ito et al. disclose a process to prepare a catalyst comprising combining (A) a co-comminuted composition of (a) a titanium compound, (b) a magnesium halide, and (c) a siloxane polymer and (B) an organoaluminum compound, wherein the siloxane polymer can be -O-SiRR-O-SiRR- with R being C₁₋₁₅ alkyl or C₆₋₁₅ aryl (claim 1). Ito et al. further disclose that the siloxane polymer has a viscosity of several centistokes to 1,000,000 centistokes at 25°C (col. 4, lines 23-24). However, Ito et al. do not teach or fairly suggest a process to prepare a catalyst comprising a bulky-ligand metallocene or Group 15 containing polymerization catalyst.

Karol et al. disclose a process to prepare a catalyst comprising combining (1) a solid, particulate, porous inorganic carrier, (2) the reaction product of (a) a vanadium trihalide and (b) an electron donor, (3) a boron halide or alkylaluminum modifier, and (4) a polysiloxane oil activity regulator having the formula of R³₃Si-O(SiR¹R²-O)-SiR³₃ with R¹-R³ being monovalent hydrocarbon radical (claim 1). However, Karol et al. do not teach or fairly suggest a process to prepare a catalyst comprising a bulky-ligand metallocene or Group 15 containing polymerization catalyst.

Fourcade et al. disclose a process to prepare a catalyst comprising combining titanium tetrachloride, silicone oil, and aluminum chlorodiethyl, wherein the silicon oil has the general formula of -O-SiRR-O-SiRR-O-SiRR-O-SiRR-O- with R being alkyl or aryl and a viscosity of 1.0 poise (Example 1; claim 1). However, Fourcade et al. do not

Art Unit: 1713

teach or fairly suggest a process to prepare a catalyst comprising a bulky-ligand metallocene or Group 15 containing polymerization catalyst.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ling-Siu Choi whose telephone number is 571-272-1098.

If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reach on 571-272-1114.



LING-SUI CHOI
PRIMARY EXAMINER

May 25, 2005